

Magnetism

Introduction:

On this Pathway, you'll see many different kinds of magnets: iron-bar magnets, small grains of black sand that act like tiny magnets, and electromagnets that are created by a current of electricity.

There's something almost magical about a magnet. A magnet creates a magnetic field that pushes and pulls through thin air, acting with a strong invisible power. Though magnetic fields are invisible, you can see their effect on iron filings, compass needles, and other magnets.

If you have any questions or problems, ask an orange-jacketed Explainer for help.

Directions:

- Find the exhibit.
- Read the instructions.
- Play with the exhibit.
- Answer the questions below.

Can't find an exhibit or have a question? Ask an explainer.



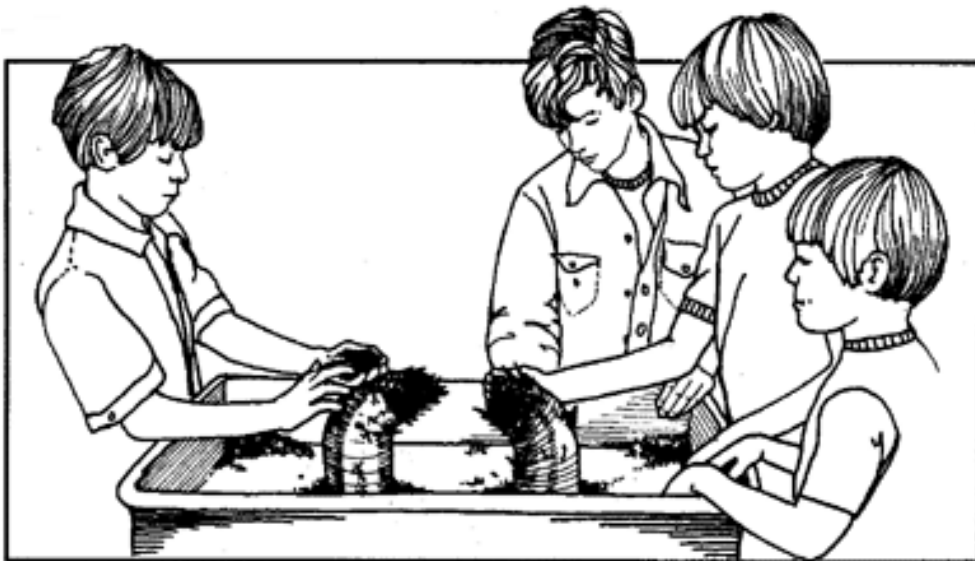
Exhibit Title	Done?
Black Sand	
Visible Magnetic Domains	
Magnetic Spinner	
Magnetic Clouds	
Magnetic Tightrope	
Floating in Copper	

Black Sand

1. Take a close look at the sand. Describe which parts are attracted to the magnet?

2. Put this sheet of paper on top of the magnet and sprinkle some black sand on it. Move the paper to different parts of the magnet. Describe the pattern you see.

3. Put your hand on the magnet and sprinkle sand on your hand. Does the magnetic field pass through your hand? Yes___ No___



Visible Magnetic Domains

Look at the disk through the microscope and notice the maze of tiny lines. These lines are tiny magnetized areas called domains. The dark lines have their north poles facing up, and the bright lines have their north poles facing down.

Bring the bar magnet near the disk. The south pole of the magnet pulls up on the north end of the domains, making the disk turn dark.

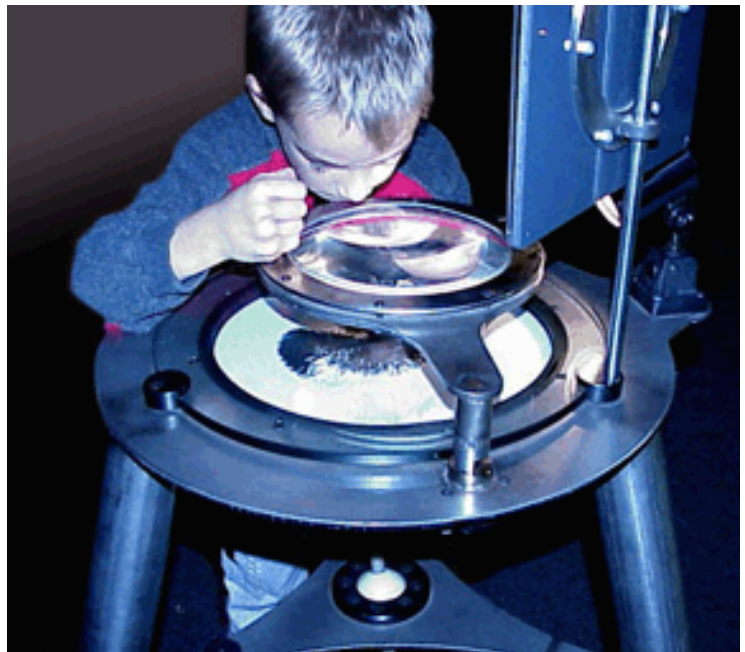


What does the other pole of the magnet do to the disk?

Magnetic Spinner

Hold the spinner with the magnets under the table and spin the spinner.

1. How do the metal filings move—the same direction as your spin or the opposite direction?

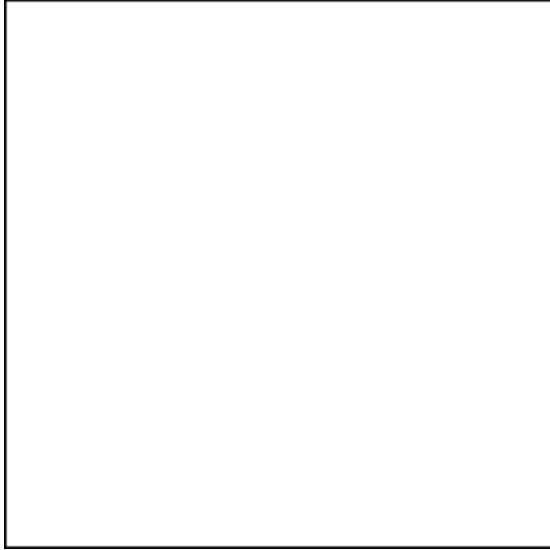


2. How do they move? Do they slide around? Jump? Tumble end over end?

Magnetic Clouds

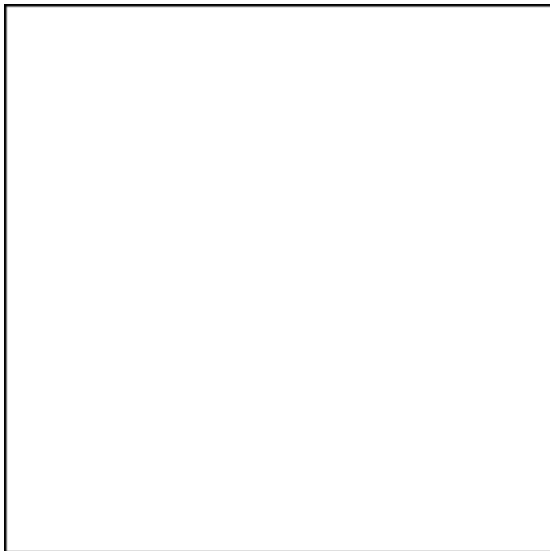
1. After you drag some black sand up from the bottom, let it go and then quickly bring the magnet down the tube to catch sand particles as they fall past.

Draw what it looks like as the magnet catches the particles.



2. Now try this with both magnets.

Draw what it looks like as both magnets catch the particles.



3. How can you get one of the magnets to stick to the upper part of the tube without slipping down?



Magnetic Tightrope

1. Which object is the easiest to move between the magnet? Why?



2. Is there any way to get the aluminum rod to stay stuck to one of the magnets? If you can do this, describe or draw how you did it.

Floating in Copper

1. Can you get the object between the copper bars to float? How?

2. What's unusual about how the magnet between the copper pieces moves?

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